

# 1700 Series

## FIBER OPTIC DIGITAL VIDEO/AUDIO TRANSPORT SYSTEM



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## **SAFETY INSTRUCTIONS AND COMPLIANCE DECLARATIONS**

PLEASE OBSERVE THE FOLLOWING SAFETY  
PRECAUTIONS AS OUR PRODUCTS CONTAIN

### **CLASS I LASER PRODUCTS**

#### **WARNING**

Do not disconnect the fiber optic connector while the unit is powered up. Exposure to laser radiation is possible when the laser fiber optic connector is disconnected while the unit is powered up.

Although the fiber optic connectors in this product emit only Class 1 energy that is below the levels considered to be hazardous, one should never stare directly into a fiber optic connector or an unconnected fiber end unless one can be certain that no exposure to laser energy could occur.



#### **CAUTION**

This manual is intended for use by trained service personnel. The use of controls, making adjustments, or performing operations other than those specified may result in hazardous radiation exposure.

The following label or equivalent is located on the surface of laser products. This label indicates that the product is classified as a CLASS 1 LASER PRODUCT.



### **SURGE PROTECTION DEVICE RECOMMENDED**

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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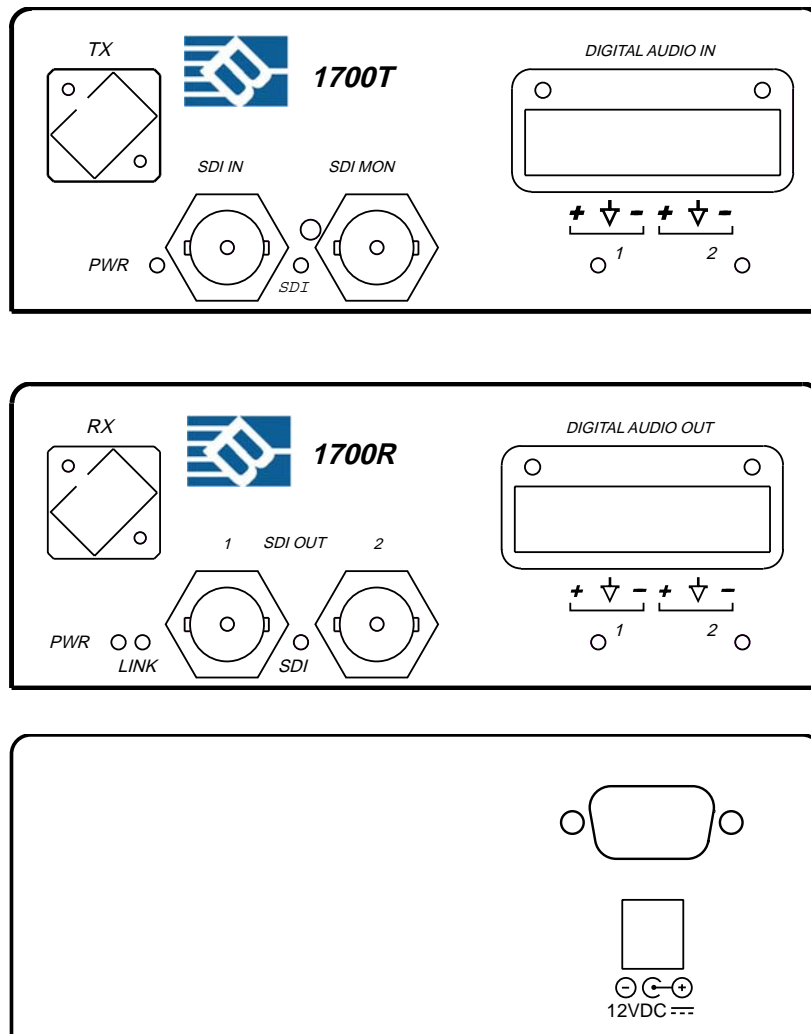
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## 1.0 PRODUCT DESCRIPTION

The 1700 system provides simultaneous transmission of digital audio, digital video and/or data over one or one pair of fibers. The 1700 unidirectional system transmits two (2) AES audios and one (1) SDI video channel in one direction. The 1700 bi-directional system transmits and receives two (2) AES audios and one (1) SDI video channel in both directions. The video quality in the 1700 system meets SMPTE-259M specifications and its audio specifications exceed AES3 standards. In addition, the 2 AES audio channels can be optionally replaced by 2 stereo analog audio channels. Many versions of optical transmitter and receiver combinations are available to address different distance requirements.

The 1700 features a digital time-multiplexing fiber optic transmission technology, capable of providing sharp video and crisp audio, with little or no maintenance, high functionality reliability, and low operating cost. In addition, the audio and video streams are totally independent. Thus the break of one stream (video or audio) will not cause the break of the other stream (audio or video). The quality of video, audio and data transmission in BCI's digital designs is much superior to the embedded video/audio transmission designs used by other manufacturers. No user adjustments are required in the 1700 system, enabling quick setup and trouble-free operation.

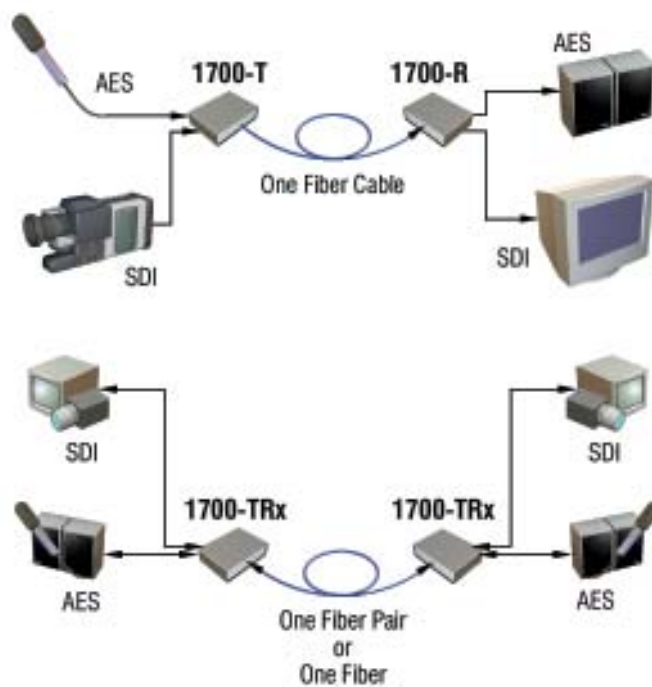
The 1700 comes with two packaging options: a rugged, standalone, and compact unit, or a plug-in card for a card cage system. Panel connectors are provided for video (BNC), audio (terminal block), and fiber connection (FC-type for singlemode fiber or ST-type for multimode fiber). They are also easily monitored by separate LED indicators for power, optical link, and channel activity.



**Figure 1-1**  
**1700 Front/Rear Panels**

## 2.0 SETUP

The BCI 1700 Series units are used in pairs. In a unidirectional application, a 1700 transmitter (1700-T) is located at the near-end and connected through one fiber to a 1700 receiver (1700-R) located at the far-end. In a bi-directional application, one 1700 transceiver unit is located at the near end and connected through two optical fibers to identical 1700 transceiver located at the far end of the link. Each unit provides a separate electrical interface connector for the Serial Digital Video data signals. Connections are one to one between both units. Figure 2-1 depicts a typical installation.



**Figure 2-1**  
**1700 Setup**

## **2.1 Mounting**

Before installing the units into your housing, make sure there is enough space to pull and connect both the electrical and optical cables without stressing them beyond the manufacturer's limitations (also known as the bend radius minimum). Rack Mount kits are available through special order.

## **2.2 Cabling and Connectors**

In order to set up the BCI 1700 properly, make sure to observe the following instructions when installing the proper cables. The 1700 requires two parts to the cabling setup: the electrical and the optical. For the optical part, observe the following procedures, as there are various types of optical connectors as illustrated on the following page.

### **2.2.1 Electrical Cable Connection**

The only available cable connections on the electrical side are for video sources.

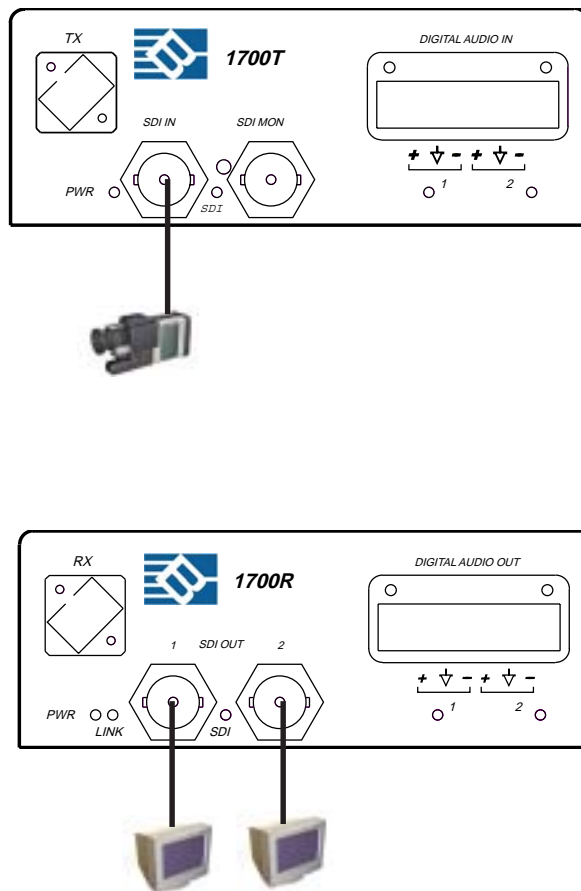
Proceed with the following instructions when connecting the various electrical devices.

### **2.2.2 Digital Video Connection**

The 1700 unit provides 75 Ohm BNC connectors for digital video input and output ports. Use the following procedure for connections.

1. On the near end, connect the user's digital video sources to the 1700-T (transmitter) unit's digital video input ports, using a coaxial cable (i.e., Belden 8281 or better).

2. On the far end, connect the 1700-R (receiver) unit's digital video output ports to the user's digital video receivers, using coaxial cables. (See Figure 2-2).

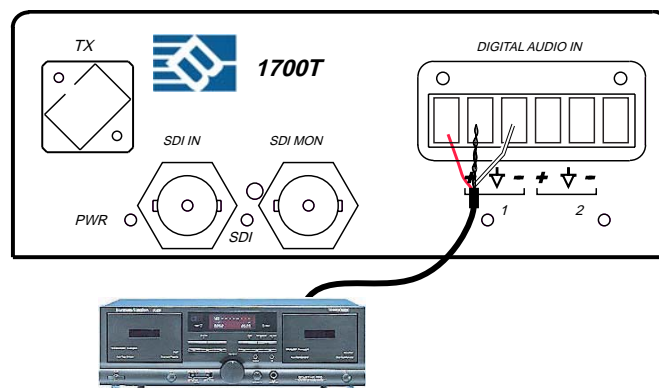


**Figure 2-2**  
**Video Connection for 1700 Receiver and Transmitter**

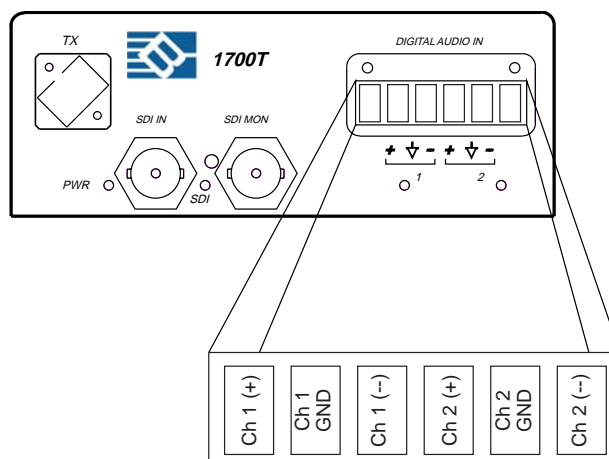
### 2.2.3 Digital Audio Connection

Perform the following steps to insure a proper audio connection:

1. At the near end (the transmitter unit), connect the user's audio sources to the 1700 unit's audio input ports. (See Figure 2-3).
2. At the far end (the receiver unit), connect the user's audio receivers to the corresponding audio output ports on the 1700 receiver unit.
3. Terminal block connectors are provided for the audio feeds (see Figure 2-3). Figure 2-4 illustrates the terminal block pin assignment for the 1700.



**Figure 2-3**  
**Audio Connection**



**Figure 2-4**  
**Terminal Block Pin Assignment**

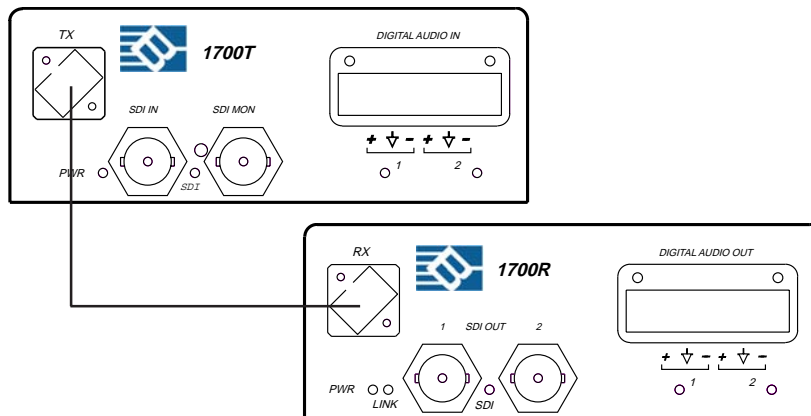
## 2.2.4 Optical Fiber Connection

Most cable manufacturers identify individual fibers in the fiber cable. Select an appropriate terminated fiber. Each unit's optical ports in the system are specified for use with multimode (62.5/125 micron) fiber, or singlemode (9/125 micron) fiber. Follow these instructions for installing and connecting the fiber optic links:



1. Ensure the power is off before proceeding with the fiber optic cable installation.
2. Prior to connecting the fiber optic cables, remove and save the dust caps from the optical port of both the 1700 units and the user's device. Clean the fiber optic connector and use a lint-free cloth dampened with alcohol to thoroughly wipe the side and end of the ferrule. Table 1 shows the connection mechanisms for both ST and FC connectors.
3. Cross-connect the fibers from one unit to the other connecting the near end 1700 unit's optical TX port to the

far end 1700 unit's optical RX port as illustrated in Figure 2-5. Observe the type of connector you have and connect the optical connector by following the instructions and guidelines provided in Table 1.

4. Make the following connections between the 1700 units. Connect the near-end 1700-T (transmitter) unit's optical TX port to the far-end 1700-R (receiver) unit's optical RX port with an optical fiber.



**Figure 2-5**  
**Optical Fiber Connection**

Connector	Illustration	Description
ST	 ST Connector	Hold the connector by the strain-relief boot* and insert the connector ferrule into the port. Rotate the boot until the "key" engages in the slot of the coupling. Push the connector housing forward until it can be turned clockwise to latch to the port.
FC	 FC Connector	Hold the connector by the strain-relief boot* and insert the connector ferrule into the port. Rotate the boot until the "key" engages in the slot of the coupling. Push the connector housing forward and screw clockwise until it is tight.

**Table 1**  
**Fiber Optic Connector Legend**

## 2.4 Power Connection

Congratulations! You are now ready to power up the BCI 1700 and set up your network connection. In order to make sure that you have a proper installation, please observe the following:

1. Your AC jack has power.
2. The 12VDC power supply is working.
3. Your electrical system has proper grounding (this ensures that your power supply does not suffer from voltage variations).
4. **Power Surge Protection. This is optional**, but highly recommended. A UPS system provides voltage regularity as well as prevents spikes from occurring, thus protecting your 1700 from sensitive voltage conditions.

The 1700 derives power from an external 12VDC power supply. This power supply is a wall mounted AC/DC adapter, 100-240 VAC, 50-60 Hz, at 1A. This power supply comes standard for the 1700 unless otherwise specified.

To provide power to the 1700, simply connect the power cord, already provided with the units, and connect it to the wall jack. (You will find one power cord per unit). Once the power cord has been connected to the wall jack, connect 12VDC to the unit and the unit should power up immediately.

If you have any problems or concerns, regarding the installation, make sure that you have taken the proper steps to ensure a proper power connection. Otherwise, feel free to contact us for any questions you may have.

### 3.0 OPERATION

After the installation procedure is completed, the units are ready for operation. To operate the BCI 1700 units, simply apply power as indicated in the previous step. Note that the front panel link status indicator, shown in Table 2, will be activated.

TRANSMITTER	Description
SDI	This GREEN LED indicates that the digital video signal is locked
PWR	This RED LED indicates that the transmit module is properly powered.

**Table 2(a)**  
**TX Status Indicators**

RECEIVER	Description
LINK	This GREEN LED indicates that the optical link is locked.
SDI	This GREEN LED indicates that the digital video signal is locked.
PWR	This RED LED indicates that the receiver module is properly powered.

**Table 2(b)**  
**RX Status Indicators**

## 4.0 MAINTENANCE AND TROUBLESHOOTING

### 4.1 Maintenance

There is no operator maintenance other than keeping the units clean. However, observe the light indicators, shown in Table 2, to make sure that the unit is working properly.

### 4.2 Troubleshooting

If the BCI 1700 units do not operate properly after installation, check for possible cable breaks, loose connections, and incorrect cable connections. If a problem exists on the fiber link, please check your fiber connectors for improperly cleaned fiber cables and connectors. If problems persist that may be fiber related, contact BCI at 1-800-214-0222 for further assistance.

For electrical problems, perform the following troubleshooting procedures:

- 1. If the POWER indicator is OFF, check for the following:**
  - a. The line cord is plugged into the unit and your outlet has power.
  - b. The 1700 unit is switched on.
  - c. Check for blown fuses (located in the rear panel-entry module).
- 2. If the POWER indicator is ON, but the Optical Link indicator is OFF, check for the following:**
  - a. Make sure the appropriate (singlemode or multimode) fibers are being used.
  - b. Fiber and fiber connectors are not broken. Ensure that the optical loss does not exceed the specified optical power attenuation .

- c. For each unit, the transmit (TX) fiber is connected to the other unit's receiver (RX).

**3. If the POWER indicator and Optical Link indicator are ON, but the video channels are not operating, then:**

- a. Check to see that the attached user equipment is turned on.
- b. Both ends of the link are connected to the corresponding equipment and to the same corresponding channel port.
- c. Cable connections at both the video channels are securely fastened to each connector. Turn the power off, then back on to reset the link.
- d. Output levels of the user's video sources are not above the allowed input levels of the 1700 units.

## 5.0 SPECIFICATIONS

### Video

Signal Format	SMPTE-259M Serial Digital Video
Signal Resolution	10 bits
Data Rate	up to 270 Mb/s
Signal Level	800mVp-p +/- 10%
Return Loss	> 15dB
Connector	75 Ohm BNC
Number of Input Video Loop-Through	1
Number of Video Output	2

### Digital Audio

Signal Format	AES/EBU under AES3-1992 (ANSI S4.40-1992, IEC 958)
Channel Capacity	2
Signal Resolution	24 bits per channel
Audio Sampling Rate	32 KHz, 44.1 KHz, 48 KHz
Input/Output Impedance	110 Ohms or 75 Ohms
Jitter	< 20 ns
Signal Level	2.3 Vp-p (110 Ohms) 0.9-1.1 Vp-p (75 Ohms)
Connector	Terminal Block

### Analog Audio

Channel Capacity	2 Stereo Analog Audio
Operating Mode	Balanced/Unbalanced
Input/Output Impedance	600/600 Ohms (Balanced)
Max. Input/Output Level	+10dBm @ 600 Ohms (Balanced)
Magnitude Freq. Response	20Hz to 20kHz @ -3dB
SNR (Weighted)	80dB @ 1kHz, 0dBm Input Level (Balanced)
Connector	Terminal Block

### Physical

Dimension: (H x W x D)	
Standalone/internal power	1.72" x 17.03" x 12.00"
Standalone/external power	1.72" x 4.36" x 8.75"
Card-cage plug-in card	5.24" x 0.94" x 11.6"
Power	
Standalone/external power	12 VDC @ 1.2A
Standalone/internal power	95-240 VAC @ 0.6A
Operating Temperature	0 to +50°C
Humidity	0 to 95% RH, non-condensing
Status Indicators	Power, Optical Link, Video/Audio/Data Activity

### Optical

Fiber Type	Multimode and Singlemode
Number of Fibers	2 or 1
Wavelength	1310 and/or 1550 nm
Fiber Optic Connector	ST (Multimode) FC (Singlemode)

## 6.0 SERVICE PROCEDURE

### 6.1 Replacement Policy

Standard products found defective on arrival (DOA) will be replaced, based on availability. Please call Customer Service at **800-214-0222** for information.

### 6.2 Return/Repair Service

The 1700 System contains no user serviceable components. If you have a problem with your unit, please contact the Customer Service Department. To facilitate our return/repair processing please contact Broadata Communications, Inc. to obtain a Return Material Authorization (RMA). Please include the following information:

- Product model number
- Serial Number
- Complete description of problem
- Hardware installation description

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Torrance, CA 90505  
**1-800-214-0222**  
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(310) 530-5958 (Facsimile)  
e-mail: [CustomerService@Broadatacom.com](mailto:CustomerService@Broadatacom.com)  
Website: [www.broadatacom.com](http://www.broadatacom.com)

## **7.0 LIMITED WARRANTY**

Broaddata Communications, Inc. (BCI) warrants, for a period of one year from date of shipment, each product sold shall be free from defects in material and workmanship. BCI will correct, either by repair, or at BCI's election, by replacement, any said products that in our sole discretion prove to be defective and are returned to the manufacturing location within 30 days after such defect is ascertained. All warranties are limited to defects arising under normal use and do not include malfunctions or failure resulting from misuse, abuse, neglect, alterations, electrical power problems, usage not in accordance with product instructions, improper installation, or damage determined by BCI to have been caused by the Buyer or repair made by a third party. Limited warranties granted on products are to the initial customer end-user and are not transferable. OUR LIABILITY UNDER THIS WARRANTY SHALL IN ANY CASE BE LIMITED TO THE INVOICE VALUE OF THE PRODUCT SOLD AND BCI SHALL NOT BE LIABLE TO ANYONE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE USE OF ITS PRODUCTS OR THE SALE THEREOF. We make NO WARRANTY AS TO THE MERCHANTABILITY OF ANY GOODS, OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE OR END APPLICATION NOR DO WE MAKE ANY WARRANTY, EXPRESSED OR IMPLIED OTHER THAN AS STATED ABOVE.

## Notes

## Notes

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